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Mixed hybrid finite element scheme for stefan problem with prescribed convection

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Abstract

We construct a mixed hybrid finite element scheme of lowest order for the Stefan problem with prescribed convection and suggest and investigate an iterative method for its solution. In the iterative method we use a preconditioner constructed by using "standard" finite element approximation of Laplace operator on a finer grid. The proposed approach develops the results of [1], where a spectrally equivalent preconditioner for the condensed matrix in mixed hybrid finite element approximation for linear elliptic equation was constructed.

Keywords

Condensed matrices, Iterative methods, Mixed hybrid discretization, Spectrally equivalent preconditioners, Stefan problem, Variational inequalities